# Problem A
# A. Nihilation

You are given an array $A = [A_1, A_2, \ldots, A_N]$ consisting of $N$ positive integers.

In one operation, you can choose integers $m$ and $k$ such that $1 \leq k < m \leq 10^9$ and set $A_i := (A_i \times k) \bmod m$ for $1 \leq i \leq N$.

What is the minimum number of operations needed to make all $A_i$ equal to $0$? Output any sequence of operations to be done. It can be proven that it is always possible to make all $A_i$ equal to $0$.

### Input

Input begins with an integer $N$ ($1 \leq N \leq 100\,000$). The next line contains $N$ integers $A_i$ ($1 \leq A_i \leq 10^9$) representing the given array $A$.

### Output

In the first line, output the minimum number $q$ of operations needed.

In the next $q$ lines, output two integers $m$ and $k$, representing the operation in the sequence of operations that makes all $A_i$ equal to $0$. If there are multiple such sequences, output any one of them.

| Sample Input 1 | Sample Output 1 |
|---|---|
| 5<br>4 1 2 6 3 | 2<br>12 6<br>3 2 |

*Explanation of Sample 1:* The following describes the sequence of operations done in the sample output.

1. $A_i := (A_i \times 6) \bmod 12 \implies A = [0, 6, 0, 0, 6]$
2. $A_i := (A_i \times 2) \bmod 3 \implies A = [0, 0, 0, 0, 0]$

It can be shown that no sequence of operations with length $1$ can make all $A_i$ equal to $0$.

| Sample Input 2 | Sample Output 2 |
|---|---|
| 2<br>9 9 | 1<br>3 1 |

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